DRAFT ENVIRONMENTAL ASSESSMENT
FOR CONSTRUCTION OF A VISITOR CENTER AND ADMINISTRATIVE FACILITIES AT ASH MEADOWS NATIONAL WILDLIFE REFUGE

EA #84550-11-01

Ash Meadows National Wildlife Refuge
Amargosa Valley, Nevada

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Prepared by
U.S. Fish and Wildlife Service
HCR 70 Box 610Z
Amargosa Valley, NV 89020
Telephone: (775) 372-5435

EXECUTIVE SUMMARY

The U.S. Fish and Wildlife Service (Service) manages Ash Meadows National Wildlife Refuge (NWR). The Refuge is located approximately 90 miles northwest of Las Vegas and 30 miles east of Death Valley National Park. The Service is proposing to construct a visitor center at Ash Meadows NWR. The proposed project area is located within Section 3, Township 18S, Range 50E, Mount Diablo Meridian at an elevation of 2,200 feet above sea level. The Service has prepared this Environmental Assessment (EA) to evaluate the environmental effects of constructing a proposed visitor center (including administrative facilities), shop/maintenance buildings, and boardwalk near the existing Refuge headquarters. This project is funded through the Southern Nevada Public Lands Management Act (SNPLMA).

All new facilities would be located near the intersection of Spring Meadows Road and the present entrance road to the existing Refuge Headquarters. The visitor center and administrative facility would be located on the southeast corner of the intersection and the shop/maintenance building would be located on the southwest corner of the intersection. The proposed facility would be a universally accessible building conforming to the Americans with Disabilities Act (ADA) with adequate space for office staff and interpretation/education opportunities for the public. The new facilities would also feature environmentally sensitive designs including solar power and energy efficient construction. The proposed project would be designed to meet Leadership in Energy and Environmental Design (LEED) standards. A new section of elevated boardwalk would lead visitors from the visitor center along and old road and connect to the existing Crystal Springs viewing area and another section would provide a loop across desert upland habitat and connect to the existing Crystal Spring boardwalk along the Crystal springs outflow.

The proposed visitor center, administrative facilities and environmental education module would be approximately 12,000 square feet and would provide offices for staff, volunteers and researchers, a conference room, education and research laboratories, interactive and interpretive displays, restrooms, and storage. The visitor parking area would accommodate approximately 20 vehicles, 4 RVs/Buses, and would include a bus drop off/turn around area. Separate staff and fleet parking areas would include space for approximately 30 vehicles. As funding becomes available, the two existing maintenance and shop buildings would be dismantled and moved to the proposed new location. The proposed shop/maintenance facilities would provide a work area for Refuge maintenance activities and heavy equipment storage.

The proposed visitor center is needed to replace the existing Refuge headquarters trailer which is in need of remodeling or replacement. The proposed project is also needed to support increased visitation and public demand for wildlife dependant recreation. Educational displays and panels within the visitor center and along the boardwalk would enhance the visitor experience, increase the educational value of refuge infrastructure, and interpret the cultural, historical, and natural history of the Ash Meadows environment. Implementation of this proposal would improve the overall visitor experience, increase educational opportunities for visitors and local school groups, increase awareness of rare habitats and species at the Refuge and provide much needed office space for staff.

In addition, the present headquarters trailer and maintenance facilities are located in the stream channel corridor and riparian forest associated with the Crystal Spring outflow channel. Although Crystal Spring outflow restoration is not part of the proposed project, implementing the proposed project is a first step toward the eventual restoration of a free-flowing and self-sustaining Crystal Spring outflow channel. Implementation of the proposed project would aid the Service in meeting recovery objectives

outlined in the Recovery Plan for the Endangered and Threatened Species of Ash Meadows, Nevada (USFWS 1990). Complete restoration of the Crystal Spring outflow system is a primary habitat and species recovery goal at Ash Meadows NWR. Therefore, moving the existing administrative infrastructure out of the Crystal Spring outflow channel corridor will aid in achieving this goal.

Implementation of the proposed project has the potential to affect soils, hydrology and water quality, water resources, air quality, ambient noise, biological resources, traffic circulation and parking, and public access and recreation. Mitigation measures would be implemented to ensure minimal impacts to these resources. Implementation of the proposed project along with management strategies outlined in the CCP/EIS (USFWS 2009) would cumulatively benefit visitors, wildlife, habitat and other Refuge resources.

The Service considered two alternatives: a No Action Alternative and a Preferred Alternative. The Preferred Alternative would include the construction of a new visitor center, administrative facilities, visitor and staff parking areas, access roads, boardwalk, and shop/maintenance buildings near the intersection of Spring Meadows Road and the present Refuge Headquarters entrance road. Under the No Action Alternative, no new facilities would be constructed and administrative activities would continue to be performed in the existing Refuge Headquarters trailer and shop/maintenance buildings.

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1.0 PURPOSE AND NEED FOR ACTION

1.1 Introduction

The U.S. Fish and Wildlife Service (Service) proposes to construct a new visitor center (including administrative facilities) and future relocation of shop/maintenance facilities on Federal land within the Ash Meadows National Wildlife Refuge (NWR) (Figure 1). This project is funded through the Southern Nevada Public Lands Management Act (SNPLMA). All new facilities would be located near the intersection of Spring Meadows Road and the present entrance road to the existing Refuge Headquarters. The visitor center and administrative facility would be located on the southeast corner of the intersection and the shop/maintenance building would be located on the southwest corner of the intersection (Figures 2 and 3). The proposed facility would be a universally accessible building conforming to the Americans with Disabilities Act (ADA) with adequate space for office staff and interpretation/education opportunities for the public. The new facilities will also feature environmentally sensitive designs including solar power and energy efficient construction. A new section of elevated boardwalk would lead visitors from the visitor center along and old road and connect to the existing Crystal Springs viewing area and another section would provide a loop across desert upland habitat and connect to the existing Crystal Spring boardwalk along the Crystal springs outflow.

The present Refuge Headquarters, a prefabricated mobile unit, is undersized, poorly insulated and in need of remodeling or replacement. Implementation of this proposal would improve the overall visitor experience, increase educational opportunities for visitors and local school groups, increase awareness of rare habitats and species at the Refuge and provide much needed office space for staff. In addition, the present headquarters trailer and maintenance facilities are located in the stream channel corridor and riparian forest associated with the Crystal Spring outflow channel. Although Crystal Spring outflow restoration is not part of the proposed project, implementing the proposed project is a first step toward the eventual restoration of a free-flowing and self-sustaining Crystal Spring outflow channel. Complete restoration of the Crystal Spring outflow system is a primary habitat and species recovery goal at Ash Meadows NWR. Therefore, moving the existing administrative infrastructure out of the Crystal Spring outflow channel corridor will aid in achieving this goal.

This project is subject to the National Environmental Policy Act (NEPA) of 1969 (42 USC 4341). Compliance with NEPA is required because the proposed action will take place on federal lands and is being completed with federal funding. This environmental assessment (EA) has been prepared in accordance with the Council on Environmental Quality NEPA Regulations (40 CRF Parts 1500-1508) and the Department of the Interior Regulations for the Implementation of NEPA contained in 43 CFR Part 46. This EA describes the purpose and need for the proposed action, the project objectives and environmental consequences of the proposed action. An analysis of the environmental consequences of the Proposed Action and No Action alternatives is included for NEPA compliance. The EA is used to determine whether the proposed action will result in a Finding of No Significant Impact or require the need for an EIS. The analysis provided in this EA also assists the Service in their decision-making process and facilitates the involvement of government agencies and the public in this process.

The Final Desert National Wildlife Refuge Complex Comprehensive Conservation Plan and Environmental Impact Statement (CCP/EIS) was completed in 2009 (USFWS 2009). The construction of a new visitor center and shop/maintenance facilities at Ash Meadows NWR was included as part of the analysis completed in the EIS. It was determined that project-specific actions outlined in the EIS would require additional NEPA analysis and documentation which would be tiered to the CCP/EIS. This EA is being

prepared to meet those requirements. The CCP/EIS was circulated for public review and finalized in 2009. The Final Desert National Wildlife Refuge Complex CCP/EIS is incorporated by reference into this document and is available for review online at http://www.fws.gov/desertcomplex/ccp.htm or at the following locations:

Complex Office in Las Vegas
4701 North Torrey Pines Drive
Las Vegas, NV 89130

Ash Meadows NWR Headquarters
610 Spring Meadows Road
Amargosa Valley, NV 89020

1.2 Purpose and Need

The National Wildlife Refuge System Improvement Act of 1997 (PL 105-57) designates six priority public uses of the Refuge System if they are found compatible with that refuges mission; hunting, fishing, wildlife observation, wildlife photography, environmental education and environmental interpretation. Five primary management goals were identified for Ash Meadows NWR in the CCP/EIS; 1) species management, 2) habitat, 3) research, 4) visitor services and 5) cultural resources. The proposed project would directly support the visitor services goal of providing "visitors with wildlife-dependent recreation, interpretation and environmental education opportunities that are compatible with and foster the appreciation and understanding of Ash Meadows NWR's wildlife and plant communities (USFWS 2009)".

The purpose and need for the actions is to: improve the Service's ability to meet the increasing demand for visitor services, improve visitor safety, provide a high quality and educational visitor experience, increase awareness of desert habitats and species, and increase the Service's ability to manage sensitive habitat types, restore habitat, and recover native species. The existing Refuge Headquarters and maintenance facilities are located within the stream channel corridor and riparian forest associated with the Crystal Spring outflow channel (Figures 2 and 3). Complete restoration of Crystal Spring and its associated riparian and wetland habitat is hindered by the presence of this existing infrastructure. In addition, as presently configured, visitor traffic (vehicles and pedestrians) mixes with maintenance operations traffic creating a potential hazard for both the public and Refuge staff. The proposed project would increase public safety by separating the traffic flow of the visitors and maintenance operations.

Visitation to the Refuge has gradually increased since establishment in 1984. Early restoration efforts at Kings Spring and Point of Rocks provided improved opportunities to view wildlife and enjoy the Ash Meadows environment. Additional habitat restoration projects and visitor service improvements have lead to an increased awareness of Ash Meadows NWR and it has become a destination for individual tourists as well as guided tour buses on the route from Las Vegas to Death Valley. The number of primary visitation sites within the Refuge has recently increased with the addition of boardwalks at Point of Rocks and Longstreet Spring and visitation continues to increase. These improvements have also resulted in increased staffing requirements as well as maintenance operations. The proposed visitor center/administrative facilities and shop/maintenance facility would support the increased staffing, operating, and maintenance needs.

Ash Meadows NWR has become a showcase for desert stream restoration, wetland restoration, and species recovery. University classes, school groups, and agency staff increasingly utilize the outdoor classroom provided by the Refuge. The current annual estimate of public visitation is approximately

70,000 visitors. However, the Refuge lacks modern infrastructure and interpretive displays to serve the increasing public demand for an educational and informative experience. In addition to interactive displays on both local and natural history, the proposed visitor center would include a resource room that would serve as a conference room for public meetings or a classroom for groups from local schools or other educational organizations. The proposed visitor center would improve visitor experience and further the mission of the National Wildlife Refuge System.

A new boardwalk departing from the proposed visitor center would connect with an existing and improved Crystal Spring boardwalk. Educational displays and panels within the visitor center and along the boardwalk would enhance the visitor experience and increase the educational value of Refuge infrastructure. The proposed updated facilities and improvements would increase the ability to reach out to local community groups and schools resulting in an overall improvement in public relations. The new facilities would support and expand the existing use of the Refuge as an outdoor classroom. In addition, implementation of the proposed project would aid the FWS in meeting recovery objectives outlined in the Recovery Plan for the Endangered and Threatened Species of Ash Meadows, Nevada (USFWS 1990).

1.3 Decisions To Be Made and Authorities

The Service will use the EA as the basis for determining whether the proposed action to construct a new visitor center and shop/maintenance facilities would constitute a major Federal action significantly affecting the quality of the human environment or result in a Finding of No Significant Impact. The decision to be made by the deciding official, the Assistant Regional Director of Refuges, will be to authorize the construction of a new visitor center and shop/maintenance facilities as proposed or to defer any action at this time. The proposed project is in compliance with current management direction for Ash Meadows NWR. If authorized, this project will comply with all necessary permits and will be required to meet all U.S. Fish and Wildlife Service Standards and applicable laws.

Project Implementation will require the following approvals and/or actions:

- U.S. Fish and Wildlife Service – Signing of Finding of No Significant Impact
- U.S. Fish and Wildlife Service – Section 7 of the Endangered Species Act.
- State Historic Preservation Office (SHPO) – Section 106 of the National Historic Preservation Act

1.4 Public Scoping and Community Involvement

Comments on this draft EA are being solicited from local, state, and federal government agencies, Tribal governments, non-governmental organizations, and the public during a 30-day public comment period. Scoping, consultation, and public coordination efforts related to the proposed project has occurred with the preparation of previous public planning documents. Specifically, the goals, objectives, and strategies anticipated to be employed by the Refuge over the next 15 years, including future restoration efforts and the construction of a new visitor center, administrative facilities and shop/maintenance facilities were outlined in the Final Desert National Wildlife Refuge Complex Comprehensive Conservation Plan and Environmental Impact Statement (USFWS 2009). Public meetings to obtain comments on the final draft CCP/EIS were held in Las Vegas, Amargosa Valley, Pahrump, Alamo, and Moapa (Nevada) on August 4-6, 2008.

Issues raised during the CCP/EIS scoping process were primarily limited to state and governmental agency comments regarding the Refuge (USFWS 2009). Other potential issues were raised by the Refuge staff, consultants, and other agency personnel. The issues included questions and comments regarding

threatened and endangered species, air quality, cultural resources, recreation, migratory birds, and wetlands. These issues are also analyzed in this EA to determine if significant impacts would occur to these resources resulting from the proposed project and to compare them to a baseline condition of No Action.

In an effort to coordinate with agencies and other stakeholders, a Symposium on Ecological Investigations and Restoration Planning took place in February of 2008, 2009, and 2010. Each year, more than 100 researchers, multi-agency staff, governmental partners, and local community members were in attendance. The Ash Meadows NWR Transportation Study Alternatives Analysis Report (USFWS 2011) was completed to identify transportation and management strategies that implement the vision of the Refuge and improve safety, reduce operations and maintenance costs, ensure accessibility to destinations within the Refuge in accordance with visitor services planning, and address traffic circulation needs. This study addressed a comprehensive range of transportation issues including speed limits, roadway access, signage, parking, trails, drainage, hydrology, regional connectivity, and maintenance. A public meeting regarding the Transportation Study Alternatives Analysis Report was held at the Amargosa Valley Community Center on March 11, 2010.

More recently, the public was notified that the Service would be evaluating the proposed project. On (June 29, 2011**)** a project update and flyer was sent to all organizations and individuals on the mailing list for the Ash Meadows quarterly newsletter, *Currents*. In addition, a notice was published in the *Pahrump Valley Times on* July 15th and *Pahrump Mirror* on July 14th, 2011.

2.0 PROPOSED ALTERNATIVES

2.1 Introduction

This EA evaluates two alternatives including a No Action Alternative (Alternative A) and the Preferred Alternative (Alternative B). Alternative B would include the construction of a new visitor center, administrative facilities, visitor and staff parking areas, access roads, shaded picnic area, boardwalk, and shop/maintenance buildings near the intersection of Spring Meadows Road and the present Refuge Headquarters entrance road (Figures 2 and 3). Under the No Action Alternative, no new facilities would be constructed and administrative activities would continue to be performed in the existing Refuge Headquarters trailer and shop/maintenance buildings. The No Action Alternative represents the baseline from which the Preferred Alternative is being evaluated.

2.1.1 Alternative A (No Action)

The No Action Alternative would maintain existing visitor services, Refuge Headquarters, and shop/maintenance facilities in their existing locations. Refuge staff would continue to conduct operations and management from the existing headquarters trailer which is in need of renovation or remodeling, poorly insulated, energy inefficient, and undersized for present staff and management requirements. A new visitor center would not be constructed, and the shop/maintenance facilities would not be moved to a new location. The No Action Alternative reflects the status quo condition.

2.1.2 Alternative B (Preferred Alternative)

Under alternative B, the new visitor center, administrative facilities, and shop/maintenance facilities would be constructed near the junction of Spring Meadows Road and the existing Refuge Headquarters entrance road. The visitor center would be constructed on the southeast corner of the junction of Spring Meadows Road and the existing Refuge Headquarters entrance road. The shop/maintenance facilities would be constructed on the southwest corner of the junction of Spring Meadows Road and the existing

Refuge Headquarters entrance road (Figures 2 and 3). In order to improve visitor safety and reduce the effects of dust and noise on the overall visitor experience, separate roads would lead to the visitor center and shop/maintenance facilities.

The proposed facility would be a universally accessible building with adequate space for office staff and interpretation/education opportunities for the public. The new facilities would also feature environmentally sensitive designs including solar power and energy efficient construction. One of the primary goals of the proposed project is to construct a Leadership in Energy and Environmental Design (LEED) certified facility. From the parking area visitors would walk on concrete sidewalks and enter the new visitor center. Following a tour of the educational facilities and indoor displays, visitors would exit the visitor center to a new section of elevated boardwalk. The new section of elevated boardwalk would lead visitors from the visitor center along and old road and connect to the existing Crystal Springs viewing area and another section would provide a loop across desert upland habitat and connect to the existing Crystal Spring boardwalk along the Crystal springs outflow. Educational displays and panels within the visitor center and along the boardwalk would enhance the visitor experience, increase the educational value of Refuge infrastructure, and interpret the cultural, historical, and natural history of the Ash Meadows environment.

The proposed visitor center, administrative facilities and environmental education module would be approximately 12,000 square feet and would provide offices for staff, volunteers and researchers, a conference room, education and research laboratories, interactive and interpretive displays, restrooms, and storage. As funding became available, the two existing maintenance and shop buildings would be dismantled and moved to the proposed new location. The proposed shop/maintenance facilities would provide a work area for Refuge maintenance activities and heavy equipment storage. The visitor parking area would accommodate approximately 20 vehicles, 4 RVs/Buses, and would include a bus drop off/turn around area. Separate staff and fleet parking areas would include space for approximately 30 vehicles.

A conceptual facility site plan (Figure 3) has been developed which identified the location of the above individual site elements (Catalyst Architecture LLC 2010). The conceptual facility site plan is intended to serve as a guide during the final design process. Although the final site layout and exact location of facilities will depend on completion of the final design process, the overall site and area of permanent disturbance has been determined as shown in Figures 2 and 3. The development of the conceptual facility site plan included a thorough investigation of potential sites for the proposed project. The proposed project site was identified based on the results of cultural resource surveys, biological surveys (particularly rare plants), drainage and flooding issues, presence and location of existing roads, traffic patterns, visitor and staff safety issues, and location of existing utilities. The proposed project site was identified in order to avoid cultural sites, utilize existing roads and utilities, improves traffic circulation and safety, prevent flood damage to infrastructure, and avoid alteration of hydrology and natural drainage. Electrical, telephone and water utilities would be located underground. Geotechnical and soil analyses completed as part of the initial site planning indicate that soil properties are suitable for the installation of leach fields. Therefore, standard septic and waste water leach fields would provide the necessary waste water treatment for the new facilities.

The project would be implemented through a design-build process in order to reduce costs and allow for the additional design necessary prior to construction. Buildings and facilities are based on the USFWS design standard for a 1-story medium sized administration and visitor facility. As shown in Figure 2, the proposed project would be completed in two phases. Phase one would consist of construction of the

visitor center, administrative facilities, access roads, parking areas, picnic area, and boardwalk. During Phase 1, the existing Refuge Headquarters trailer would be removed. Additional funding is needed for the Phase 2 in order to relocate most of the existing maintenance support buildings and construct the a new shop/maintenance facilities. All areas within Phase 2 would be restored to riparian woodland habitat following the demolition of the existing headquarters building and relocation of the existing shop/maintenance buildings to the proposed, new location.

An area of potential disturbance associated with the proposed project has been identified (Figure 2). Actual and permanent disturbance would be limited to areas immediately adjacent to the proposed facilities and structures. The combined construction area and associated permanent disturbance for the new visitor center, shop/maintenance buildings, parking areas and sidewalks would be approximately 5 acres (Figure 2). Approximately 2,800 feet of new boardwalk would be constructed. Approximately 1,200 feet of the new boardwalk construction will be in an existing road bed with approximately 1,600 feet crossing upland habitat. The proposed visitor center would be approximately 12,000 square feet and would provide offices for staff and researchers, a conference room, education and research laboratories, interactive and interpretive displays, restrooms, and storage. The proposed shop/maintenance buildings would be approximately 9,000 square feet and would provide a work area for Refuge maintenance activities and heavy equipment storage.

2.2 Alternatives Considered But Not Further Evaluated

Early planning and design efforts for the new facilities included investigation of at least three alternative sites for construction: 1) the location of the existing administrative facilities, 2) the location adjacent to the existing administrative facilities, and 3) on the north side of Spring Meadows Road near the present chemical storage facilities.

One of the primary reasons for relocating all administrative facilities (visitor center, refuge headquarter, and shop/maintenance buildings) is to facilitate the long term plan for restoration of riparian and wetland habitat associated with the Crystal Spring outflow channel. As presently configured, the administrative facilities are located in the core of the historic riparian and wetland habitat. Complete restoration of the Crystal Spring outflow channel and associated habitat is not possible with the present location and configuration of the administrative facilities. Therefore, constructing the new visitor center and shop/maintenance facilities in their existing location was not evaluated further.

Construction of the proposed facilities adjacent to and immediately north of the existing Refuge Headquarters trailer was also considered. Construction of the new visitor center and shop/maintenance facilities in this location would place new facilities in an ephemeral drainage which is a tributary to the Crystal Spring outflow channel. This alternative site contains three major limitations: 1) complete restoration of the Crystal Spring outflow channel and associated riparian and wetland habitat would not be possible; 2) major alteration of the ephemeral tributary drainage would be required in order to minimize flooding and provide off-site drainage; and 3) the risk of flood damage would be increased relative to the existing location of the administrative facilities.

Construction of the new facilities on the north side of Spring Meadows Road near the present chemical storage facilities was not explored further due primarily to the separation of the site from the Crystal Spring boardwalk and the overall decreased functional and aesthetic site value. Placement of the new visitor center at this site would require visitors to walk across Spring Meadows Road to access the Crystal Spring boardwalk or require visitors to drive from the visitor center to additional parking closer to the boardwalk. This alternative site would reduce the overall visitor experience and flow of visitors

from the parking area to the indoor educational and interpretive displays and finally exiting through the visitor center to the outdoors and along the Crystal Spring boardwalk.

3.0 AFFECTED ENVIRONMENT

As previously discussed, this EA is tiered to the Final Desert National Wildlife Refuge Complex CCP/EIS (USFWS 2009) and the proposed project was included in that document. The affected environment section of the CCP/EIS describes the general physical and biological environment, cultural resources, visitor services, and socioeconomic conditions of the region as well as Ash Meadows NWR. Therefore, the resource descriptions in the CCP/EIS are incorporated by reference. The reader is directed to the CCP/EIS for a detailed discussion of the region and Ash Meadows NWR environment.

The following sections provide a description of the affected environment and resources that could be affected by implementation of the proposed project at Ash Meadows NWR. All new facilities would be located near the intersection of Spring Meadows Road and the present entrance road to the existing Refuge Headquarters. The visitor center would be located on the southeast corner of the intersection and the shop/maintenance building would be located on the southwest corner of the intersection (Figures 2 and 3).

3.1 Physical Environment

Located approximately 90 miles northwest of Las Vegas and 30 miles east of Death Valley National Park, Ash Meadows NWR is an island of biodiversity in a landscape of striking contrasts. The proposed project area is located in Ash Meadows NWR within Section 3, Township 18S, Range 50E, Mount Diablo Meridian at an elevation of 2,200 feet above sea level. The riparian woodland associated with the Crystal Spring outflow channel forms the southern boundary of the proposed project area and is dominated by screwbean mesquite (*Prosopis pubescens*), baccharis (*Baccharis emoryi*) and salt grass (*Distichlis spicata*). Bulrush (*Schoenoplectus* spp.) and cattail (*Typha* spp.) line the stream channel margin. Salt grass (*Distichlis spicata*), alkali sacaton (*Sporobolus airoides*), and spring-loving centaury (*Zeltnera namophila*) are the dominant plants in the Alkali meadow between the Crystal Spring outflow channel and more xeric uplands to the north. Ash Meadows sunray (*Enceliopsis nudicaulis* var. *corrugata*) is found primarily in the xeric and rocky uplands of the northern half of the proposed project area.

Topography/Visual Quality

The selected site for the proposed new visitor center and shop/maintenance buildings would be located on a low rise near the intersection of Spring Meadows Road and the existing Refuge Headquarters entrance road. Due to low topographic relief and high vegetation density in the Refuge, existing structures within the Refuge are visible only from a small number of high points inside and outside of the Refuge boundaries. The selected site for the proposed project is at a similar elevation (2,200 feet) to the existing Refuge Headquarters (2,190 feet) but in an area of much lower vegetation density. The proposed visitor center and shop/maintenance buildings would be more visible from Spring Meadows Road but equal in visibility to the existing Refuge Headquarter from areas throughout and outside of the Refuge.

Geology and Soils

The structural geology of the Ash Meadows area is typical of basin and range geology. Fault block mountains form the east and west edge of the Amargosa Valley. The Devils Hole Hills form the east boundary of Ash Meadows NWR and are composed of Paleozoic limestone and dolomite. The Funeral Mountains lie beyond the western boundary of the Refuge and are more complex in structure and

composed of a Proterozoic metamorphic core overlain by folded and faulted Paleozoic and Cenozoic formations. Most of Ash Meadows is underlain by valley fill sediments and late Cenozoic formations. A Refuge wide soil survey was completed in 2010 which described the surface and subsurface soils throughout Ash Meadows NWR (Whitehorse Associates 2010). Geotechnical studies, including an overall site survey and soil borings, have been completed at the selected site for the proposed new visitor center and shop/maintenance buildings. Although Ash Meadows is surrounded by at least two major fault zones (the Amargosa Fault Zone and the Stateline Fault Zone) no faults or surface ruptures were reported within the selected site for the proposed visitor center and shop/maintenance buildings. No groundwater was encountered during the geotechnical investigation. The geotechnical analyses indicate that the site is underlain by caliche and moderately corrosive soils and that the selected site would be suitable for a single story structure (Catalyst Architecture LLC 2010).

Hydrology and Water Quality

The most prominent aspects of hydrologic conditions at Ash Meadows include very little annual rainfall combined with low frequency – high magnitude flood events that occur primarily during winter or late summer. The vast amount of water (approximately 17,000 acre feet) that discharges from seeps and springs throughout the Refuge creates one of the most stunning aspects of Ash Meadows NWR; the Refuge is one of only a few verdant oases of such scale that can be found in the Mojave Desert. The majority of the Refuge consists of dry uplands. However, discharge from the springs sustains dense riparian woodlands, alkali meadows, marshes and a great diversity of plant and animal life. The hydrologic conditions of the proposed visitor center and shop/maintenance facilities are characterized by dry uplands and alluvial material. The proposed building site is bordered on its southern edge by a small, ephemeral channel. The Crystal Spring outflow channel forms the southern boundary of the entire proposed project area (Figures 2 and 3).

Water Resources

The proposed project site is located on a low rise that is dry, covered with sparse upland vegetation and has exposed bedrock at the surface. Soil samples collected during the geotechnical site investigations from a depth of approximately 10 feet showed no signs of a shallow water table. Following the establishment of Ash Meadows NWR, 17,674 AFY of water rights within the Refuge boundary were obtained by the Service. The Service has 57 water rights within Ash Meadows NWR; 55 rights for surface water/spring flow and 2 rights for wells. Water supply for the existing Refuge Headquarters, shop/maintenance buildings and bunkhouse is provided by a single well.

Hazardous Materials

Farming activities ceased at Ash Meadows following the establishment of the Refuge. Although environmental contamination could have occurred due to chemical application, chemical storage, dumping, or equipment maintenance prior to Refuge establishment, no contamination has been discovered within the Ash Meadows NWR boundary to date. In addition, no hazardous materials or evidence of their use were observed during the soil and geotechnical investigations associated with the proposed project.

Air Quality

Air quality is determined by measuring concentrations of certain pollutants in the atmosphere. The U.S. Environmental Protection Agency designates an area as being *in attainment* for a particular pollutant if ambient concentrations of that pollutant are below National Ambient Air Quality Standards. The Environmental Protection Agency established the national standards, as directed by the Clean Air Act, to define levels of air quality that are necessary, with an adequate margin of safety, to protect the public health (primary standards) and the public welfare (secondary standards). The standards specify the maximum pollutant concentrations and frequencies of occurrence for specific averaging periods. Areas in violation of one or more of these standards are called nonattainment areas. Southern Nye County is classified as a nonattainment area due to violations with national inhalable particulate matter (PM_{10}) standards (Nevada Division of Environmental Protection 2011) but is presently performing air quality mitigation measures.

Air quality in Ash Meadows NWR is influenced by the Las Vegas and Pahrump Valleys. However, pollutant levels at Ash Meadows are typically lower than Federal and State air quality standards for carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), PM_{10}, sulfur dioxide (SO_2), lead (Pb), total suspended particulates (TSP), hydrogen sulfide (H_2S), and visibility. Other factors that influence air quality include, dust (mainly PM_{10}), and combustion emissions from the City of Pahrump and roadways including Highway 160. A significant source of PM_{10} in Ash Meadows NWR is from disturbed vacant land, unpaved roads and road shoulders, unpaved parking lots within Amargosa Valley (Nevada Division of Environmental Protection 2011).

Ambient Noise Levels

The amount of noise generated within the Ash Meadows NWR by daily operation and maintenance activities is minimal and poses no danger to human health. The primary noise receptors associated with the proposed project would be Refuge visitors and employees, privately owned residential inholdings within the Refuge boundary and residential areas outside of the Refuge boundary. The nearest residential inholding to the proposed project area is greater than 2 miles away. The nearest residential area outside of the Refuge is greater than 4 miles away.

3.2 Biological Resources

Floodplain and Wetlands

The Upper Carson Slough contains the core wetlands of Ash Meadows NWR and is a tributary drainage to the Amargosa River. However, surface flow connection between Ash Meadows and the Amargosa River only occurs during low frequency, high magnitude flood events such as record floods. A large portion of the Upper Carson Slough falls within the FEMA designation of the 100 year floodplain. Ash Meadows is well known for unique habitat ranging from alkali meadows that may never be inundated, but below which the groundwater is shallow, to seasonally inundated wet meadows or perennially inundated marshes and open water. Ash Meadows NWR was designated a Wetlands of International Importance in 1986 by the Ramsar Convention. The convention is the only international accord dedicated to the worldwide protection of a single ecosystem type. The selection of Ash Meadows NWR for designation was based on its international significance in terms of biology, ecology, zoology, limnology or hydrology. Ash Meadows met criteria for designation due to its special value as habitat for rare, vulnerable, endangered, or endemic species, and the quality and unique aspects of its flora and fauna.

Endangered, Threatened and Rare Species

A total of six species at Ash Meadows are listed as endangered while seven species are listed as threatened under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seg*.). Four species of fish, one bird and one plant are listed as endangered while six plant species and one aquatic true bug are presently listed as threatened. Endangered species include the southwestern willow flycatcher (*Empidonax traillii extimus*), Ash Meadows speckled dace (*Rhinichthys osculus nevadensis*), Ash Meadows Amargosa pupfish (*Cyprinodon nevadensis mionectes*), Warm Springs Amargosa pupfish (*Cyprinodon nevadensis pectoralis*), Devils Hole pupfish (*Cyprinodon diabolis*), and Amargosa niterwort (*Nitrophila mojavensis*). Threatened species include Ash Meadows milk-vetch (*Astragalus phoenix*), Ash Meadows ivesia (*Ivesia kingii* var. *eremica*), Ash Meadows blazing star (*Mentzelia leucophylla*), Ash Meadows sunray (*Enceliopsis nudicaulis* var. *corrugata*), the Ash Meadows gumplant *(Grindelia fraxino-pratensis*), the spring-loving centaury (Zeltnera namophila), and the Ash Meadows naucorid (*Ambrysus amargosus*). Additional threatened species that have been observed in or near Ash Meadows NWR include the Bald Eagle (*Haliaeetus leucocephalus)* and Desert tortoise (*Gopherus agassizii*). The Ash Meadows sunray (*Enceliopsis nudicaulis* var. *corrugata*) and Spring-loving centaury (*Zeltnera namophila*) occur within the project area. The Ash Meadows Amargosa pupfish (*Cyprinodon nevadensis mionectes*) occurs in close proximity to but not within the project area.

Migratory Birds

Executive Order issued January 11, 2001, defines the responsibilities of the Federal agencies to protect migratory birds; the Migratory Bird Treaty Act of 1918 and subsequent amendments (16 U.S.C. 703-711) state that it is unlawful to take, kill, or possess migratory birds. A list of those protected birds is found in 50 C.F.R. 10.13. Ash Meadows is one of the last remaining oases in the Mojave Desert frequented by a wide diversity of migratory birds. Ash Meadows was designated an Important Bird Area for Nevada, providing habitat for over 246 species of birds. A list of these bird species can be found in Appendix H of the final CCP/EIS. Fall and spring migration periods produce the greatest diversity and numbers. Many thousands of warblers have been documented using Ash Meadows during migration.

Areas of Critical Environmental Concern

There are two Areas of Critical Environmental Concern (ACEC) in the vicinity of Ash Meadows NWR both of which were established October 5, 1998. The 37,353 acre Ash Meadows ACEC surrounds the Ash Meadows NWR boundary. The 6,783 acre Amargosa Mesquite ACEC is located approximately 10 miles to the northwest of the proposed project site.

Invasive and Non-Native Species

According to the U.S. Fish and Wildlife Service, invasive species have become the single greatest threat to the Refuge System. This threat is clearly visible throughout Ash Meadows where close to 100 species of nonnative plants and animals have been introduced. The invasive nature of some of these species threatens the listed and endemic species of Ash Meadows, alters ecosystem processes, degrades wildlife habitat, reduces the quality of wildlife-dependent recreation, and prevents habitat restoration, public access, and construction of public facilities in infested areas.

Ash Meadows NWR is mandated through policy to control or eradicate non-native species and has developed an Integrated Pest Management Plan to address invasive species (USFWS 2009). An estimated 4,460 acres within Ash Meadows were used for agricultural production and livestock grazing including a portion of the proposed project area. The greatest concentration of non-native plants occur in abandoned fields throughout the Refuge which contain Russian knapweed (*Acroptilon repens*), hoary cress (*Cardaria draba*), five hook bassia (*Bassia hyssopifolia*), Malta starthistle (*Centaurea melitensis*),

yellow starthistle (*Centaurea solstitialis*), sorghum and Johnson grass (*Sorghum bicolor* and *S. halepense*) and red brome (*Bromus rubens*). In many parts of the Refuge, these monocultures appear to be expanding beyond the abandoned field boundary into surrounding areas. The extent of this expansion and its threat is beginning to be better understood through vegetation mapping and research investigations funded by the Refuge. Weed expansion beyond the existing agricultural fields is a concern because of the potential threat they pose to listed plants including the Ash Meadows gumplant (*Grindelia fraxino-pratensis*), spring-loving centaury (*Zeltnera namophila*) and Ash Meadows ivesia (*Ivesia eremica*) which occur in the riparian zone along spring margins. Aquatic species that have been introduced into the Refuge and current non-native aquatic species in the project area include: crayfish (*Procambarus clarkii*), bullfrogs (*Rana catesbeiana*), red-rim melania (*Melanoides tuberculatus*), gambusia (*Gambusia affinis*), sailfin molly (*Poecilia latipinna*), and green sunfish (*Lepomis cyanellus*). All non-native fish species were intentionally introduced by humans. The major springs on the Refuge are regularly trapped and monitored for non-native aquatic species.

3.3 Cultural Resources

Human occupation at Ash Meadows has been dated to at least 7,000 B.P. Traditionally, the land that is now Ash Meadows NWR formed a general boundary area between the Western Shoshone and Southern Paiute. Both the Paiute and Shoshone utilized the plant resources found at Ash Meadows. Mesquite groves were often claimed and managed by individual families. Pine nuts and game were available in the nearby mountains. The Ash Meadows Paiute practiced horticulture near streams, growing corn, squash, beans, grapes, and sunflowers in the moist soil. Within the ethnographically recorded history of the area, Ash Meadows was the location of fall festivals, where extended families would reunite after their summer foraging cycles and gather in other groups. Euroamericans began settling in the area in the 1870's when nearby mining booms attracted ranchers to the native grasses for grazing livestock. A Refuge-wide cultural resource survey was completed for Ash Meadows NWR in 2008 (HRA 2008). This detailed survey followed methods similar to those for a BLM Class III inventory. This detailed survey identified numerous sites throughout the Refuge and 12 sites were identified within ½ mile of the project area. However, no identified sites are located within the proposed project area.

3.4 Social and Economic Environment

Land Use

Prior to Refuge establishment in 1984, lands within the Ash Meadows NWR boundary supported agricultural use. Agricultural activities were primarily limited to grazing and cultivation of alfalfa. However, other minor uses included the cultivation of cotton and smaller subsistence farming activities. There are several privately owned inholdings within the Refuge boundary. A small number of the inholdings have a culinary or industrial water right to diversion of surface flow or culinary usage from a well. Otherwise, all water rights are in Federal ownership and are managed as part of the National Wildlife Refuge System. As a National Wildlife Refuge, Ash Meadows is managed primarily for wildlife dependant uses and the recovery of habitat and species. The area within the proposed project area is the present hub of Refuge management, maintenance and operations activities and contains an existing Refuge Headquarters modular building, a bunkhouse, two maintenance buildings along with smaller storage sheds and the Crystal Spring boardwalk.

Transportation, Traffic Circulation and Parking

The Ash Meadows NWR Transportation Study (USFWS 2011) was completed to identify transportation and management strategies that implement the vision of the Refuge and improve safety, reduce operations and maintenance costs, ensure accessibility to destinations within the Refuge in accordance

with visitor services planning, and address traffic circulation needs. This study addressed a comprehensive range of transportation issues including speed limits, roadway access, signage, parking, trails, drainage, hydrology, regional connectivity, and maintenance. Spring Meadows Road is the primary thoroughfare through the Refuge by which visitors presently access the existing Refuge Headquarters and most of the major, developed points of interest at Ash Meadows. Longstreet Road is the primary thoroughfare for accessing the northern half of the Refuge. Longstreet Road forms a loop with Peterson Reservoir Road. The proposed project would be at the intersection of Spring Meadows Road and Longstreet Road resulting in increased visibility and ease of access for first time visitors attempting to locate the Refuge Headquarters and visitor center. Based on the traffic study (USFWS 2011), the section of Spring Meadows Road in the vicinity of the proposed new visitor center and shop/maintenance buildings receives the highest level of traffic. There are approximately 10 visitor parking spaces, 15 parking spaces for fleet and staff vehicles and 1 volunteer RV parking space at the existing Refuge Headquarters. Based on the conceptual facility site plan the proposed project would include approximately 20 visitor parking spaces, 4 visitor RV spaces, a bus loading/unloading area, approximately 30 staff and fleet parking spaces and 5 RV parking spaces for volunteers.

Public Utilities and Easements

The only public utilities that extend on to Ash Meadows NWR are an overhead power line and underground telephone service. There are right of ways and easements associated with the overhead power lines and underground telephone service. These utilities and easements are adjacent to the proposed project site. There are no public gas, water or sewer lines within the Refuge.

Public Access and Recreation

Ash Meadows NWR was established primarily to conserve the threatened and endangered plant and animal species that occur within the Refuge boundary. The Refuge is managed to promote all native species of wildlife and to provide wildlife-oriented recreational opportunities that are compatible with the primary purpose: wildlife observation, wildlife photography, interpretation, education and hunting. These opportunities would be enhanced following the completion of the proposed action. Most visitors come to the Refuge in the spring and fall during mild temperatures but, the Refuge does receive visitation throughout the year. Visitors often stop at the Refuge Headquarters for directions or advice on what to see in the Refuge. Almost all visitors that stop at the headquarters walk the existing boardwalk to Crystal Spring. The Refuge is well known for the birding watching opportunities and has been identified as an Important Bird Area of Nevada by the Audubon Society (McIvor 2005). Large numbers of the visitors are photographers seeking photos of rare species or striking landscapes. Usage by school groups has increased greatly with the addition of a full time interpretive and educational staff member. The majority of visitors (approximately 55%) are from southern Nevada.

Economy, Employment and Environmental Justice

The economic base of Amargosa Valley is composed primarily of agriculture, mining and tourism. There is also a service industry supporting these activities. The main agricultural activities include dairies and dairy feed production. At present, clay mining is the only active mining in the immediate vicinity of Ash Meadows NWR. Ash Meadows NWR and the Amargosa Valley is a stopping point along the route between Las Vegas and Death Valley as well as for travelers on the highways between Beatty, NV and Baker, CA.

The Western Shoshone, specifically the Timbisha Shoshone, Pahrump Paiute Tribe and the Las Vegas Paiute band were the primary Native American groups to inhabit the region surrounding Ash Meadows NWR. The Timbisha Shoshone reservation consists of approximately 10,600 acres throughout

southwestern Nevada and eastern California. In addition, approximately 300,000 acres within Death Valley National Park are co-managed by the Timbisha Shoshone. The 2000 Timbisha Shoshone Homeland Act (Public Law [PL] 106-423) identified the potential for a cooperative agreement between the affiliated tribe and the FWS.

Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations) requires each Federal agency to make achieving environmental justice part of its mission by identifying and addressing disproportionately high and adverse human health or environmental effects of its program, policies and activities on minority and low-income populations. The U.S. Department of Housing and Urban Development (HUD) defines low income as 80 percent of the median household income for the area, subject to adjustment for areas with unusually high or low incomes or housing costs. According to the 2000 Census, the median household income in 1999 dollars was $36,024 in the Amargosa Valley. This compares with an estimated statewide median household income of $44,581 and country wide median household income of $41,994 (U.S. Census Bureau 2000). Based on the 2010 Census, the median household income was $44,000 in the Amargosa Valley, $60,859 in the State of Nevada and $55,970 nationwide (U.S. Census Bureau 2010). An income of $48,687 would represent 80 percent of the median household income for Nevada; therefore, based on figures available, Amargosa Valley would meet the definition of low income. For purposes of comparison, the percentage of minorities in the Amargosa is similar to that of the southern Nevada/California region as a whole. Based on the 2000 Census, the Hispanic or Latino population is the largest minority group comprising approximately 10% of the Pahrump and Amargosa Valley population (U.S. Census Bureau 2000).

4.0 ENVIRONMENTAL CONSEQUENCES

The following sections provide an analysis of the effects of each alternative on physical, biological, and cultural resources as well as socioeconomic conditions. The following sections provide information needed to make an informed decision regarding the proposed project and associated alternatives. Topics discussed in this section include direct, indirect, and cumulative effects to the environment as a result of implementing the proposed action or project alternatives. Discussion hereafter is limited to resources that have been determined to be potentially affected by the proposed project.

The following resources would not be affected by the proposed project and will not be discussed further in this environmental assessment.

- Areas of Critical Environmental Concern – Activities associated with the proposed project would not occur within any ACEC.
- Cultural Resources – No cultural resources are located in the proposed project area.
- Hazardous or Solid Wastes – No hazardous or solid wastes are located in the proposed project area.
- Land Use - As a National Wildlife Refuge, Ash Meadows is managed primarily for wildlife dependant uses and the recovery of habitat and species. The area within the proposed project area is the present hub of Refuge management and no major changes in Refuge land use will occur due to the implementation of the proposed project.

4.1 The Physical Environment

Effects Related to Topography/Visual Quality

Alternative A
Selection of the No Action Alternative would have no effect on topography. The existing Refuge Headquarters and shop/maintenance buildings would remain in their present location and condition. Visual quality, relative to the visitor who comes for wildlife dependant activities or a walk along the Crystal Spring boardwalk, would remain as is but would also not be improved. Leaving the existing Refuge facilities in their present location detracts from the potential outdoor experience associated with the aquatic and riparian woodland habitat adjacent to the Crystal Spring outflow channel and boardwalk due to the ongoing traffic, maintenance operations and associated noise within and immediately adjacent to the riparian area.

Alternative B
Implementation of the proposed project would require site grading and leveling. However, the placement of the building and parking areas as well as the alignment of road and walkways has been identified in the conceptual site plan that maintains and utilizes existing topography in a manner that preserves a natural appearance. Presently, dense vegetation surrounds the existing administrative facilities. Therefore the existing administrative facilities are visible only from high points throughout the Refuge. Construction of the proposed visitor center on a low rise near the intersection of Spring Meadows Road and the existing Refuge Headquarters entrance road will increase the visibility of the facilities from high points throughout the Refuge. However, the visual effect and view of the surrounding landscape from the proposed visitor center will be enhanced relative the existing Refuge Headquarters location.

Effects Related to Geology and Soils

Alternative A
Under the No Action Alternative there would be no effect on geology and soils. Ongoing maintenance activities would continue to have a limited, infrequent effect on subsurface and surface soils.

Alternative B
The subsurface materials and soils on site do not represent a hazard to development of the proposed project. Geotechnical surveys and analysis completed for the proposed project indicate that the site is suitable for single story building construction and that the underlying formation is suitable to support the proposed visitor center and shop/maintenance buildings. Although the Amargosa Valley is located within an active seismic zone, based on geotechnical and soils analysis, the local conditions do not preclude the type of construction or use associated with the proposed project (Catalyst Architecture LLC 2010).

Effects Related to Hydrology and Water Quality

Alternative A
Selection of the No Action Alternative would prevent complete ecological and hydrologic restoration of the Crystal Spring outflow channel and associated aquatic and riparian woodland habitat. Great potential exists for habitat restoration, species recovery, and improved public use if the Refuge operations were to be moved out of the historic Crystal Spring drainage way. As presently configured,

Crystal Spring enters a system of deteriorating concrete ditches approximately 1,500 feet downstream from the spring source. This system of ditches was constructed prior to Refuge establishment for irrigation purposes. The constriction of flow associated with the ditches impounds water upstream in the vicinity of the existing boardwalk resulting in decreased stream velocity and development of thick cattail growth within the stream channel. The deteriorating and leaking ditches frequently become clogged with live and dead vegetation which, if not cleared, results in shallow spreading water and thick cattail growth. Thick cattail growth is not the desired vegetation for native aquatic species and the removal and control of cattail is a costly and time consuming maintenance requirement. In addition, the accumulation of dry cattails results in increased fire hazard.

Alternative B
Implementation of the proposed project, including grading and site preparation, building and parking area construction and installation of utilities would result in exposed soils and would require the use of heavy equipment. Potential environmental impacts could result due to 1) increased runoff and sedimentation and 2) release of contaminants from construction equipment or fueling activities. Due to the distance of the project site from wetlands or a water source, the potential for impact from increased runoff and sedimentation is low. Best management practices (BMP) would be implemented during construction, and during Refuge operations following project completion, are outlined in Section 5.1.

Implementation of the proposed project would facilitate broader goals and objectives identified in the CCP/EIS; restoration of hydrologic processes and the restoration of Crystal Springs Management Unit (USFWS 2009). Moving the existing Refuge facilities out of the historic Crystal Spring outflow would allow restoration of alkali meadow, riparian woodland and emergent marsh habitat that was present prior to agricultural development. The Refuge spends an average of $40,000 per year on cattail removal and control. Although implementation of Crystal Spring outflow restoration is not part of the proposed project, implementing the proposed project is a first step toward the eventual restoration of a free-flowing and naturally sustainable Crystal Spring outflow channel. Future stream channel restoration will alleviate management expenses associated with the present condition of the stream channel and ditches.

Effects Related to Water Resources

Alternative A
The No Action Alternative would have no effect on existing water resources. The existing water source would continue to be used at the existing facilities and the location of use would remain the same.

Alternative B
An existing well at the Refuge headquarters is used to supply water to the existing headquarters, bunkhouse and shop/maintenance buildings. The existing well would be maintained for use in the proposed new facilities. Although increased staffing and visitation could result in increased water use in the proposed, new facilities, implementation of mitigation measures outlined in Section 5.1 would aid in offsetting such an impact.

Effects Related to Air Quality

Alternative A
No new construction is proposed under the No Action Alternative. Therefore effects to air quality would be limited to ongoing operation and maintenance activities.

Alternative B
Impacts to air quality associated with the proposed project will be limited to local dust and exhaust emissions during the construction phase. Dust emissions during construction will be controlled daily with a water truck. Present and future dust emissions on Refuge roads due to daily and visitor travel will continue to be controlled with a water truck. Construction and implementation of the proposed project will not result in any violation of air quality standard, increase the frequency or severity of any existing violations or delay attainment of an air quality standard. This conclusion is based on the size of the proposed project, duration of construction and comparison to similar projects. The construction is expected to be completed within one year. Therefore, construction emissions would be short term, and project related dust would be controlled using best management practices.

Effects Related to Ambient Noise Levels

Alternative A
Under the No Action Alternative, ambient noise levels would remain the same and no short term increases in ambient noise due to construction activities would occur. However, noise associated with Refuge management, operation and maintenance activities in the existing maintenance/shop facilities would persist. It is likely that more sensitive wildlife species (such as migratory birds and secretive marsh birds) avoid the present Refuge Headquarters area due to the occurrence of maintenance activities within the riparian woodland and historic Crystal Spring outflow.

Alternative B
The greatest potential for a temporary increase in noise levels within the Refuge due to the proposed project is from construction activities associated with the proposed project. These potential increases would be temporary and would return to existing levels following project completion. Although construction of the proposed project would result in a short term increase in ambient noise there would be no unsafe noise levels for visitors frequenting the existing Refuge Headquarters during the construction phase. Visitor access to the existing Refuge Headquarters and Crystal Boardwalk would be maintained during construction. The proposed project would not result in a permanent increase in ambient noise levels within or outside of the Refuge boundary. Due to the great distance between the Refuge and residential areas, the proposed project would not increase ambient noise in those areas. Following the completion of construction activities there would be no long term increase in or impact from project implementation. Construction of the proposed project and relocation of Refuge management, operation and maintenance activities outside of the Crystal Spring outflow will reduce the amount of wildlife disturbance in the riparian woodland due to noise. Relocation of the shop/maintenance facilities will also reduce the amount of noise visitors experience along the Crystal Spring boardwalk.

4.2 Biological Resources

Effects Related to Floodplain and Wetlands

Alternative A
Selection of the No Action Alternative would have no effect on the FEMA designated 100 year floodplain. However, the existing Refuge Headquarters and shop/maintenance buildings are located in the historic drainage of the Crystal Spring outflow which, based on 1948 imagery, was a mixture of riparian woodland and wetland. Soils in the vicinity of the present Refuge Headquarters indicate the former presence of wetland conditions (Whitehorse Associates 2010). This area was eventually cleared and converted for agricultural use and subsequently selected as the Refuge Headquarters due to the presence of existing development and proximity to Crystal Spring. One of the primary goals of the site planning and selection process for the proposed project was to move Refuge facilities out of the floodplain and wetland habitat associated with the Crystal Spring outflow channel. Not implementing the proposed project would prevent complete restoration of the former riparian woodland and wetlands.

Alternative B
The proposed project is located in dry, upland habitat and does not involve construction in a floodplain or wetland. The proposed project is not located within the FEMA designated 100 year floodplain and would not affect floodplains or ACOE jurisdictional wetlands. Implementation of the proposed project would facilitate the future restoration of wetlands associated with the Crystal Spring outflow channel.

Effects Related to Endangered, Threatened and Rare Species

Alternative A
Selection of the No Action Alternative would prevent any potential negative impacts on endangered, threatened and rare species associated with construction activities. However, as previously discussed, restoration of the historic Crystal Spring outflow channel, riparian woodlands and associated wetlands is a primary goal in the CCP/EIS (USFWS 2009). Relocation of the Refuge Headquarters and shop/maintenance facilities is a necessary and integral component of restoration. Therefore, the No Action Alternative will have a long term effect of preventing recovery of endangered, threatened and rare species as part of the future restoration of Crystal Spring outflow channel and associated habitat.

Alternative B
Of the six endangered and seven threatened species that occur at Ash Meadows NWR, the following species occur within the proposed project area; Ash Meadows sunray (*Enceliopsis nudicaulis* var. *corrugata*) and Spring-loving centaury (*Zeltnera namophila*). The Ash Meadows Amargosa pupfish (*Cyprinodon nevadensis mionectes*) occurs adjacent to but not within the proposed project area. The Ash Meadows Amargosa pupfish (*Cyprinodon nevadensis mionectes*) is present in the Crystal Spring outflow channel adjacent to the existing and proposed boardwalk. Formal consultation with the Service regarding the proposed project is presently underway and will be finalized prior to any action on the proposed project.

Ash Meadows sunray (*Enceliopsis nudicaulis* var. *corrugata*) plants occur within the 5 acre project permanent disturbance area but designated critical habitat does not. Ash Meadows sunray (*Enceliopsis nudicaulis* var. *corrugata*) is present within the construction area of the proposed new visitor center and shop/maintenance buildings. Based on recent rare plant surveys (Bio-West 2010), there were

approximately 79,508 sunray plants within the Refuge and approximately 746 sunray plants within the 62 acre proposed project area. Therefore, this project may impact less than 0.9% of the Ash Meadows sunray. Spring-loving centaury (*Zeltnera namophila*) plants and designated critical habitat are present within a portion of the construction area of the proposed boardwalk. Based on rare plant surveys (Bio-West 2010), there are approximately 4,593,971 spring-loving centaury plants within the Refuge and 286 spring-loving centaury plants near the project area. Therefore, this project may impact less than 0.006% of the spring-loving centaury plants. The USFWS (1985) designated 1,840 acres as critical habitat for spring-loving centaury. Up to 2.5 acres of critical habitat could be disturbed within the proposed project area, or approximately 0.14% of the total critical habitat.

The Ash Meadows Amargosa pupfish (*Cyprinodon nevadensis mionectes*) is present in the Crystal Spring outflow channel adjacent to the existing and proposed boardwalk. The proposed project would not increase the amount or change the location of the present boardwalk adjacent to the outflow channel. The proposed project includes construction of a new section of boardwalk between the proposed visitor center and the existing boardwalk. Construction of the new boardwalk section would not impact the Ash Meadows Amargosa pupfish (*Cyprinodon nevadensis mionectes*). Existing kiosks and interpretive displays would be replaced along the existing boardwalk.

The proposed project could result in increased Refuge visitation. Increased visitation would be expected to promote increased awareness and appreciation for the Ash Meadows environment and the rare species that occur there. Increased awareness and education would be accomplished through direct contact with refuge staff as well as interpretive and educational displays within the visitor center and installed along the Crystal Spring boardwalk. The elevated boardwalk will aid in the prevention of trampling effects on Ash Meadows sunray (*Enceliopsis nudicaulis* var. *corrugata*) and Spring-loving centaury (*Zeltnera namophila*). In addition, displays along the boardwalk would interpret the ecology of rare plants as well as habitat restoration efforts.

Effects Related to Migratory Birds

Alternative A
Under the No Action Alternative there would be no immediate effects on migratory birds. However, the existing Refuge Headquarters and shop/maintenance facilities are located in the riparian woodland habitat associated with the Crystal Spring outflow channel where migratory birds are most often observed resting, feeding or nesting (Figures 2 and 3). Therefore, long term disturbance of migratory birds is more likely to occur under existing conditions and the No Action Alternative.

Alternative B
Implementation of the proposed project could have a short term impact on migratory birds if construction activities occur during the spring or fall migration or breeding season. However, the proposed construction area is in upland habitat approximately 1,000 feet from the dense riparian woodland associated with Crystal Spring where migratory birds are most commonly observed resting, feeding or nesting. Construction of a new visitor center and relocation of the shop/maintenance facilities outside of the Crystal Spring outflow would decrease the level of disturbance to migratory birds associated with management and maintenance operations that presently occur within the existing Refuge Headquarters area.

Effects Related to Invasive and Non-Native Species

Alternative A
Under the No Action Alternative, no impacts due to invasive and non-native species would occur.

Alternative B
There are no major infestations of non-native plants within the proposed project area. Implementation of mitigation measures outlined in Section 5.2 would prevent potential introductions of invasive non-native species and provide for the control of those already present within the Refuge. Any invasive and non-native plant species that colonize the disturbed areas would be eradicated following the protocol set forth in the Ash Meadows Integrated Pest Management Plan (USFWS 2009).

4.3 Effects Related to Cultural Resources

Alternative A
Selection of the No Action Alternative would have no effect on cultural resources because no ground disturbance within the proposed project area would occur.

Alternative B
The entire Ash Meadows NWR has been surveyed for historic and cultural resources. Refuge staff reviewed the results of these surveys prior to the development of the site plan for the proposed project and used the survey results to select a location that would avoid any known historic or cultural resources. A cultural resource survey completed on November 1, 2010 determined that no historic or cultural resources are present within the proposed project area. The SHPO concurred in a letter dated February 9, 2011 (SHPO 2011) that cultural resources completed to date throughout the Refuge and within the proposed project area are sufficient to identify historic and cultural resources and that the proposed project will not pose any effect to such resources. Therefore, no significant impacts to cultural or historic resources are likely to occur as a result of implementing the proposed project. In the event that any buried and previously unidentified resources are located during construction, all work in the vicinity will cease and SHPO will be contacted for additional consultation.

4.4 Social and Economic Environment

Effects Related to Transportation, Traffic Circulation and Parking

Alternative A
Under the No Action Alternative no change to existing transportation or traffic circulation patterns would occur. Similarly, the No Action Alternative would not result in increased demand for parking. The roadways, parking areas and number of vehicles accommodated would remain the same. If Refuge visitation continues to increase as shown in the Transportation Study (USFWS 2011), traffic circulation and parking in the vicinity of the Refuge headquarters could become problematic during periods of high visitation.

Alternative B
Population growth combined with increased public awareness and FWS outreach efforts has resulted in annual increases in visitation to Ash Meadows NWR since establishment in 1984. Implementation of the proposed project could increase visitation to the Refuge and visitor center. Continued visitation and public demand for the outdoor experiences offered at the Refuge is expected to increase independently

of the proposed project. The proposed project is intended to address increased visitation and public demand as well as improve public understanding of resources managed by the FWS. Presently, there are approximately 10 visitor parking spaces, 15 parking spaces for fleet and staff vehicles and 1 volunteer RV parking space at the existing Refuge Headquarters. Based on the facility site plan the proposed project would include approximately 20 visitor parking spaces, 4 visitor RV spaces, a bus loading/unloading area, 30 staff and fleet parking spaces and 5 RV parking spaces for volunteers.

Although the number of parking areas per category of use in the proposed project is approximately double the existing amount, most of the additional space will be utilized during periods of high public visitation or FWS meetings. Under existing conditions, visiting FWS staff and contractors must utilize limited visitor parking in front of the Refuge Headquarters. Therefore, the increased number of parking areas is not expected to result in an equivalent increase in staff use or number of trips made daily. The impact of increased public visitation and infrequent increases in FWS and contractor use would be limited and the effect on surrounding roadways would be inconsequential. Therefore, the proposed project would not have an adverse effect on local or regional transportation. The proposed project would prevent future traffic circulation and parking shortages if visitation continues to increase in the future as it has been increasing since Refuge establishment. Access to the existing Refuge headquarters and associated parking would be maintained during construction. Additional signage would be installed to ensure safety and to guide visitors to the existing headquarters and parking area.

Effects Related to Public Utilities and Easements

Alternative A
Selection of the No Action Alternative would have no effect on public utilities or easements within the Refuge as there would be no change from existing conditions.

Alternative B
Implementation of the proposed project would have no negative impact on easements within the Refuge. Implementation of the proposed project could have a negative impact on public utilities if energy demand increases due to increased public visitation or use by staff. However, the proposed new visitor center will be designed to be energy efficient (LEED certification) in order to reduce overall energy requirements of the facility and will connect to existing power and telephone lines. If feasible, overhead power lines will be buried in order to improve visual quality.

Effects Related to Public Access and Recreation

Alternative A
Under the No Action Alternative public access and recreational opportunities would remain in their present state. Public demand for recreational opportunities would be expected to continue increasing. However, increased demand would not be met with increased opportunity for educational and recreational opportunities and infrastructure.

Alternative B
Under the Preferred Alternative, visitors would utilize the proposed visitor center as a gateway to the remainder of the Refuge. Educational and interpretive displays within the proposed visitor center and along the improved Crystal Spring boardwalk would enhance and improve the visitor experience. As shown in Figure 3, the amount of boardwalk and recreational opportunity would be increased under the Preferred Alternative. The proposed project would enhance visitor experience, increase awareness,

facilitate education on the Ash Meadows ecology and environment, and provide improved recreational opportunities. The proposed project would not result in any modification of existing hunting access or any reduction of public access and recreational opportunities. Implementation of the proposed project would not limit public access or recreation. Access to the existing Refuge headquarters, parking and Crystal Spring boardwalk would be maintained during construction. Temporary signage would be installed to guide visitors around the construction area and explain the project.

Effects Related to Economy, Employment and Environmental Justice

Alternative A
Selection of the No Action Alternative would have no effect to employment or matters of environmental justice. However, since tourism is a large component of the economy, selection of the No Action Alternative may result in the loss of opportunity to boost or, at minimum, support the local economy in the event that implementation of the Preferred Alternative were to be the direct cause of increased public visitation to the area.

Alternative B
Construction, operation and maintenance of the proposed project would not result in any disproportionately high or unfavorable human health or environmental effects on low-income or minority populations. Implementation of the proposed project is expected to be accommodated by increased public use and visitation, similar to that observed following the completion of other public access improvement projects at the Refuge such as the Longstreet Spring and Point of Rocks boardwalks. It is anticipated that a great number of visitors to the new visitor center and boardwalk will be from immediately surrounding areas including Amargosa Valley and Pahrump. The continuation of existing public outreach activities such as volunteer and stewardship days as well as hosting local school groups for environmental education would promote access as well as equality.

4.5 Cumulative Effects
Cumulative effects may arise due to the combined effect of multiple related or unrelated projects or actions of the past, present and future. Cumulative, significant actions can result in cumulative impacts which may not be recognized on a project by project basis. For the analysis of cumulative effects the Refuge boundary has been selected as the spatial boundary and the time frame beginning at Refuge establishment (1984) extending 20 years into the future has been selected as the duration of effect. This spatial and temporal bracket was selected for three primary reasons; 1) an extensive amount of management activities including habitat and species recovery efforts have taken place since Refuge establishment, 2) the Desert Complex NWR CCP/EIS (USFWS 2009) is a 15 year document and 3) management actions and needs are likely to change substantially within a 20 year time frame. Major projects completed since Refuge establishment to which the proposed project could incrementally add include partial restoration of Kings Spring outflow channel, complete hydrologic restoration of Point of Rocks Spring, Refuge-wide tamarisk removal and invasive plant eradication efforts, and restoration of Jackrabbit, School, and North/South Indian Springs. Future projects to which the proposed project could incrementally add include total restoration of the following systems; Rogers Spring, Longstreet Spring, Five Springs, Kings Spring, Warm Springs Complex, Bradford Spring, Crystal Spring. Removal of hydrologic barriers within the Upper Carson Slough and Crystal Management Units could also contribute cumulative effects.

Overall, the habitat and species recovery efforts to date have been met with success. In addition, future actions are expected to be beneficial to the mission of Ash Meadows NWR and the FWS. However, the

proposed project would incrementally add minor and temporary impacts to the following resources and management topics:

- Topography/Visual Quality
- Geology and Soils
- Hydrology and Water Quality
- Water Resources
- Air Quality
- Ambient Noise Levels
- Endangered, Threatened and Rare Species
- Migratory Birds
- Invasive and Non-Native Species
- Transportation, Traffic Circulation and Parking
- Public Access and Recreation

The impacts of past and future management actions listed above as well as the short term impacts associated with the proposed project are individually minor and not expected to be major when considered collectively. In addition, the impacts are separated throughout the Refuge and across a broad span of time. Adverse impacts due to implementation of the proposed project would be short term and limited primarily to construction impacts. Mitigation measures to minimize impacts are outlined in this EA as well as the CCP/EIS (USFWS 2009). In combination with management actions identified in the CCP/EIS, implementation of the proposed project would provide improved visitor, educational and interpretive services while meeting habitat and species recovery goals and objectives. Increased opportunities for visitors to experience the Refuge would result in increased public awareness regarding the services provided by the FWS as well as the resources they protect.

4.6 Summary of Effects

Approximately 5 acres would be permanently modified including new roadways, walkways, parking areas and building footprints for the proposed visitor center and shop/maintenance buildings (Figures 2 and 3). Approximately 5 acres would be rehabilitated and restored in the existing Refuge Headquarters and shop/maintenance facility location following the demolition of the existing headquarters building and relocation of the shop/maintenance facilities. Selection of the Preferred Alternative will facilitate the complete ecological and hydrologic restoration of the historic Crystal Spring outflow channel and associated riparian woodland, alkali meadow and wetland habitat. Although the complete restoration of the historic Crystal Spring outflow is not part of the proposed project, approximately 200 acres of riparian woodland and 40 acres of alkali wet meadow and wetland (USFWS 2009) could be restored in the future if the Preferred Alternative is selected.

Table 1. Summary of Impacts by Alternative

Impact Topics	**No Action Alternative**	**Preferred Alternative**
Topography/Visual Quality	No adverse effect on topography/visual quality. Improvements to educational experience and interpretive opportunities for visitors would not occur.	Temporary impact to topography associated with site preparation and grading. Enhanced visual quality and view of mountains/desert/riparian woodland for visitors.
Geology and Soils	No adverse effect on geology or soils.	Effects on soils in project area due to construction activities. Opportunity to interpret local geology and soils as part of educational displays.
Hydrology and Water Quality	Complete ecological and hydrologic restoration of Crystal Spring outflow would not occur due to presence of existing infrastructure. Continued maintenance of deteriorating, former concrete irrigation network costly. Deteriorating irrigation network results in undesirable habitat and persistence of invasive species.	Disturbance of soils and potential for sedimentation and runoff could temporarily impact water quality.
Water Resources	No adverse effect on water resources. Improvements to visitor experience and interpretation opportunities would not occur.	No adverse effect. Water conservation measures and rain water harvesting would improve efficiency and prevent overuse.
Air Quality	No adverse effect.	Temporary increase in dust/particulate emission during construction.
Ambient Noise Levels	Existing ambient noise due to operation and maintenance activities within riparian woodland would continue to effect wildlife.	Temporary increase in ambient noise due to construction activities. No hazardous noise levels or long term effect. Reduction of noise in riparian woodland and near existing boardwalk due to operation and maintenance activities.
Floodplain and Wetlands	Project is not within FEMA designated floodplain or ACOE jurisdictional wetlands. Complete ecological and hydrologic restoration of Crystal Spring outflow would not occur due to presence of existing infrastructure.	Complete ecological and hydrologic restoration of Crystal Spring outflow could proceed following removal of existing infrastructure. Former riparian woodland and wetland habitats associated with Crystal Spring outflow could be restored.

Table 1 Continued. Summary of Impacts by Alternative

Endangered, Threatened and Rare Species	No adverse effect due to construction activities. However, future ecological and hydrologic restoration of Crystal Spring outflow would not be possible and species/habitat recovery efforts would be hindered.	May effect, and likely to adversely affect species/critical habitat. Long term benefit to species/habitat expected.
Migratory Birds	No adverse effect.	Minor impact if construction occurs during spring or fall migration. Long term reduction in disturbance within riparian woodland following relocation of shop/maintenance facilities.
Invasive and Non-Native Species	No adverse effect. Restoration of former agricultural fields and historic Crystal Spring outflow, presently colonized by invasive plants, would not occur.	Potential for invasive plant species colonization in disturbed areas.
Cultural Resources	No adverse effect.	No adverse effect.
Transportation, Traffic Circulation and Parking	Continued increase in traffic and visitation will lead to circulation and parking limitations during periods of high visitation.	No adverse effect. Improvement in visitor safety, circulation and parking.
Public Utilities and Easements	No adverse effect.	No adverse effect. Electrical and phone utilities will be underground. Updated facilities will be energy efficient.
Public Access and Recreation	Increased demand for recreation and outdoor experiences would not be met with improved public access and recreational opportunities.	Visitor experience, awareness, interpretation and access would be improved.
Economy, Employment and Environmental Justice	No adverse effect. May result in loss of opportunity to boost or support local economy with tourism dollars.	No adverse effect. Implementation expected to be accommodated by increased use and visitation and tourism dollars. Continuation of public outreach activities with local schools/groups promotes access as well as equality.

5.0 MITITIGATION MEASURES/BEST MANAGEMENT PRACTICES
The Service would implement the following mitigation measures and best management practices as part of the proposed project.

5.1 The Physical Environment

Topography/Visual Quality
Landscaping, native plantings and low berms would buffer the overall visibility of the parking areas and shop/maintenance facilities. Color selection and construction materials would be selected to blend into surrounding area. Planting the grounds surrounding the proposed visitor center with native vegetation would lessen the overall visibility and contrast of the building with the surrounding environment.

Geology and Soils
Impacts due to site clearing and preparation, foundation excavation and other activities that could disturb soils would be mitigated by the following BMPs:

- Apply water to surface soils prior to excavation.
- Apply water to subsurface soils during excavation and loading operations.
- Apply water on roads and active construction areas at the beginning of each day, throughout the day as needed, and at the end of each day to minimize dust emission.
- Apply water to all soil stockpiles as needed to maintain a surface crust and prevent dust emission.
- Maintain dust control actions until final soil stabilization and revegetation actions have been completed.

Hydrology and Water Quality
To ensure compliance during construction, BMPs would be presented on the first page of construction designs and specifications under the heading of Special Environmental Conditions. A preconstruction meeting would also be required prior to the commencement of any construction in order to discuss and review all environmental mitigation and special site requirements.

In order to minimize impacts to water quality due to increased sedimentation during construction, the following BMPs would be implemented:

- Install silt fencing around construction perimeter.
- Install silt fencing around all soil stockpiles that are stored for a long duration.
- Direct flow away from and around construction areas to prevent increased sedimentation.
- Install turbidity barriers (weed-free fiber wattles) to trap mobilized sediment.
- Dispose of all construction debris, solid waste, and liquid waste in approved containers.
- Revegetate all disturbed areas with native vegetation to promote surface stabilization.

Impacts to water quality due to fuel or chemical spills during construction would be mitigated with the following BMPs:

- Inspect all construction equipment for leaks prior to project start-up and regularly during the construction process
- Store all fuels and chemicals in a designated spill prevention zone.

- Provide secondary containment for all fuel and chemical storage tanks.
- Develop an emergency spill response plan prior to project implementation or follow Refuge spill plan guidelines.
- Maintain an on-site spill kit for the duration of construction.

Facilities, walkways and parking areas would be designed to direct surface runoff to containment areas or landscape areas to avoid water quality impacts. If feasible rainfall would drain from the roof onto a water harvesting channel and would be used to irrigate landscaping and plantings of native vegetation. Impacts due to future chemical and fuel handling and runoff from within the proposed shop/maintenance area would be prevented by following guidelines in the existing Refuge spill plan. In addition, surface runoff from the proposed shop/maintenance area would be directed to a containment area and oil-water separator.

All areas disturbed due to implementation of the proposed project would be revegetated with native plants following project completion. Landscape design specifications would allow only native plants grown from seed or propagated from materials collected at Ash Meadows. Minimization of drainage alteration and soil erosion would be required. The BMPs to be implemented during and after construction, including measures related to construction equipment and materials staging, would reduce potential impacts related to hydrology and water quality to below a level of significance.

Water Resources
Water conservation measures would be incorporated into the overall project design. In order to offset potential impacts to water resources associated with increased staffing and visitation, the following BMPs would be implemented:

- If feasible include rain water harvesting devices to deliver runoff from roofs to native plantings and landscaped areas surrounding the proposed facilities.
- Install high-efficiency, water saving fixtures in all proposed facilities.
- If necessary, install pit toilets outside of the proposed visitor center.

Air Quality
BMPs outlined in the above sections for Geology and Soils and Hydrology and Water Quality mitigation measures would also minimize particulate emissions. Specifically, the following BMPs would be implemented to mitigate for any temporary air quality impacts:

- Limit stockpile height to 8 feet
- Limit vehicle speeds to 15 miles per hour in staging areas and on construction access roads
- Prevent trackout of soil and debris by installing a gravel trackout pad or mechanical track and wheel washer.
- Apply water to soil and debris during excavation, demolition and loading activities

Ambient Noise Levels
As explained in Section 4.1, impacts due to construction activities will be temporary and will not be harmful to visitors or Refuge staff. Mitigation measures related to wildlife and ambient noise are outlined in Section 5.2: Migratory Birds.

5.2 Biological Resources

Floodplain and Wetlands
Because the proposed project is located in dry, upland habitat and does not involve construction in a FEMA designated floodplain or ACOE jurisdictional wetland, no mitigation measures are necessary.

Endangered, Threatened and Rare Species
The following BMPs would be used to minimize impacts to sensitive plant species:

- Equipment and human access zones would be delineated by fencing and/or flagging.
- Areas containing sensitive plant species would be delineated using flagging and avoided to the maximum extent possible.
- The construction area would be surveyed for Ash Meadows sunray and spring-loving centaury during the flowering season prior to the initiation of construction activities.
- Locations of all plants observed would be mapped and flagged. The proposed project construction area would be modified to the extent practicable to protect the plants.
- Sensitive plant species that cannot be avoided would be transplanted or seed would be collected.
- All construction equipment would be free of soil or plant materials and inspected prior to unloading.
- Dust control would be strictly adhered to in order to protect the plants from dust impacts.
- Special environmental conditions and construction requirements (including BMPs) would be included in construction designs, specifications and plans associated with facilities and boardwalk construction and would be thoroughly explained during pre-construction project meetings.

Although no major construction or earth moving activities will occur in or adjacent to the Crystal Spring outflow channel, the following precautions will be made to prevent disturbance of the Ash Meadows Amargosa pupfish (*Cyprinodon nevadensis mionectes*) during boardwalk and interpretive display installation:

- Special environmental conditions and construction requirements (including BMPs) would be included in construction designs, specifications and plans associated with interpretive display installation and would be thoroughly explained during pre-construction project meetings.
- Construction debris or sawdust will not enter the stream channel.
- All treated lumber will be pressure washed off-site.
- All treated lumber will be cut to size off-site in order to ensure that no sawdust from treated lumber falls on the ground or into the water.

Migratory Birds
The following BMPs and precautions will be implemented in order to prevent disturbance of migratory birds:

- If construction activities are to be performed during breeding season, nest surveys will be completed within and adjacent to the project area prior to initiation of construction activities.
- If nests or nesting activity is observed, and deemed to be potentially disturbed, construction activities will not be initiated.

Invasive and Non-Native Species
In order to ensure that invasive or non-native plant species are not introduced, the following BMPs would be implemented:

- BMPs would be noted in Special Environmental Conditions to be included in the designs and specifications for the proposed project.
- All equipment would be thoroughly cleaned of soil and plant debris with a high pressure sprayer at an offsite location prior to being delivered for use on the proposed project.
- All equipment would be inspected by FWS personnel prior to unloading for use on the proposed project.
- All areas disturbed during construction would be stabilized and revegetated following the completion of the proposed project.
- Any invasive and non-native plant species that colonize the disturbed areas would be eradicated following the protocol set forth in the Ash Meadows Integrated Pest Management Plan (USFWS 2009).

5.3 Cultural Resources
Although cultural resource surveys and clearance efforts have shown that no cultural resources are present within the proposed project area (HRA 2008; SHPO 2011), the following mitigation measures will be implemented to ensure that buried or previously unidentified cultural resources are not impacted:

- In the event that any buried and previously unidentified resources are located during construction, all work in the vicinity will cease and SHPO will be contacted for additional consultation.
- Incorporate interpretive media in the proposed visitor center explaining the rich cultural history of Ash Meadows NWR. In addition, the Service would conduct participatory interpretive planning with the seven nations of Nuwuvi and the Death Valley Timbisha Shoshone throughout the design phase and the development of culturally and historically accurate interpretive exhibits.

5.4 Social and Economic Environment

Transportation, Traffic Circulation and Parking
As discussed in Section 4.4, the proposed project would not have an adverse effect on local or regional transportation. Short term impacts to traffic circulation and parking would be mitigated by implementing the following BMPs:

- Install signs to provide clear direction for visitors seeking the existing Refuge headquarters and parking area.

Public Utilities and Easements
No mitigation measures are necessary.

Public Access and Recreation
Mitigation measures for the temporary disturbance associated with implementation of the proposed project would include:

- Install signs directing visitors around the construction area, explaining the project and its completion date, identifying any temporarily closed areas, and identifying additional recreational opportunities throughout the Refuge (i.e., the Point of Rocks and Longstreet Springs boardwalks).

Economy, Employment and Environmental Justice
No mitigation measures are necessary for economics, employment or environmental justice.

6.0 CONSULTATION AND COORDINATION WITH OTHERS

6.1 Agency Coordination and Public Involvement
Comments are being requested from Federal, Tribal, State, and local agencies, non-governmental organizations, and interested members of the public during the review period for the draft EA.

6.2 Other Federal Laws, Regulations, and Executive Orders
The Service would comply with the following Federal laws, executive orders, and legislative acts during the implementation of the proposed action: National Environmental Policy Act of 1969, as amended; Floodplain Management (Executive Order 11988); Intergovernmental Review of Federal Programs (Executive Order 12372); Protection of Historical, Archaeological, and Scientific Properties (Executive Order 11593); Protection of Wetlands (Executive Order 11990); Management and General Public Use of the National Wildlife Refuge System (Executive Order 12996); Environmental Justice in Minority Populations and Low-Income Populations (Executive Order 12898); Hazardous Substances Determinations (Secretarial Order 3127); Endangered Species Act of 1973, as amended; Title 50 of the Code of Federal Regulations; Fish and Wildlife Act of 1956, Refuge Recreation Act, as amended; National Wildlife Refuge System Administration Act of 1966, as amended; National Wildlife Refuge Improvement Act of 1997; Archeological Resource Protection Act of 1979, National Historic Preservation Act of 1966, as amended.

6.3 Distribution and Availability
The draft EA is available for public comment for a period of 30 calendar days from July 19, 2011 to August 17, 2011 and is posted on the Refuge Complex webpage at http://www.fws.gov./desertcomplex). The draft EA is available electronically at the website above and copies are also available for review at the Ash Meadows NWR (HCR 70 610 Spring Meadows Road, Amargosa Valley, NV 89020) and at the Desert National Wildlife Refuge Complex office (4701 North Torrey Pines Drive, Las Vegas, NV 89130). Questions regarding this document or the proposed project can be directed to the Refuge Manager; Sharon McKelvey (775) 372-5435. Comments can be made via phone at (775) 372-5435, in person at Ash Meadows NWR, or e-mailed to Cyndi_Souza@fws.gov.

7.0 PLANNING TEAM, AUTHORS, AND REVIEWERS

7.1 Planning Team

Sharon McKelvey, Refuge Manager, Ash Meadows National Wildlife Refuge
Cristi Baldino, Refuge Biologist, Ash Meadows National Wildlife Refuge
Darrick Weissenfluh, Wildlife Biologist, Ash Meadows National Wildlife Refuge
Laurie Simons, Desert Complex Biologist, United States Fish and Wildlife Service
LouAnn Speulda-Drews, Archeologist, Region 8 United States Fish and Wildlife Service
Patricia Roberson, Planning and NEPA, Region 8 United States Fish and Wildlife Service

7.2 Authors

Sharon McKelvey, Refuge Manager, Ash Meadows National Wildlife Refuge
Cristi Baldino, Refuge Biologist, Ash Meadows National Wildlife Refuge
Darrick Weissenfluh, Wildlife Biologist, Ash Meadows National Wildlife Refuge
Laurie Simons, Biologist, United States Fish and Wildlife Service
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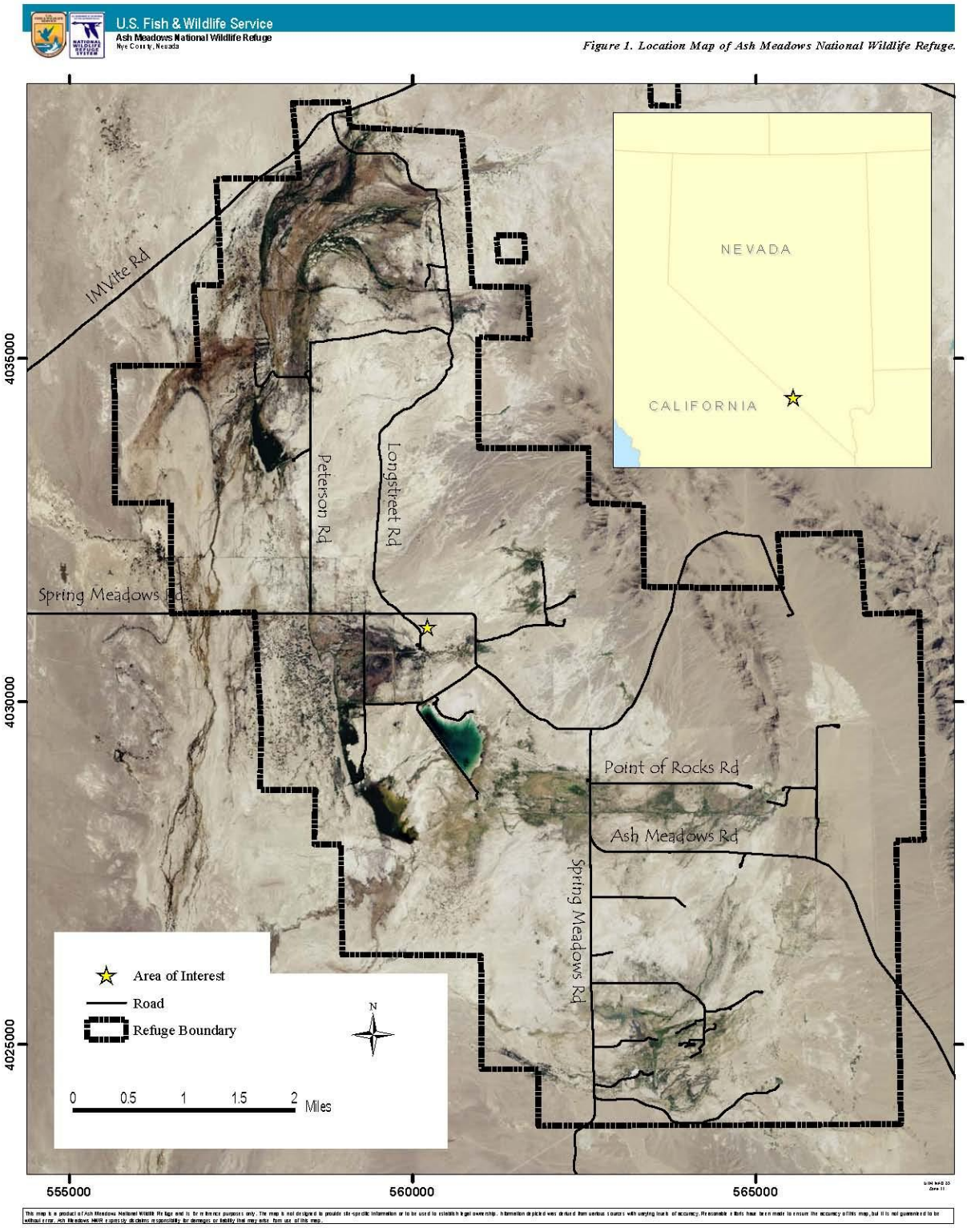
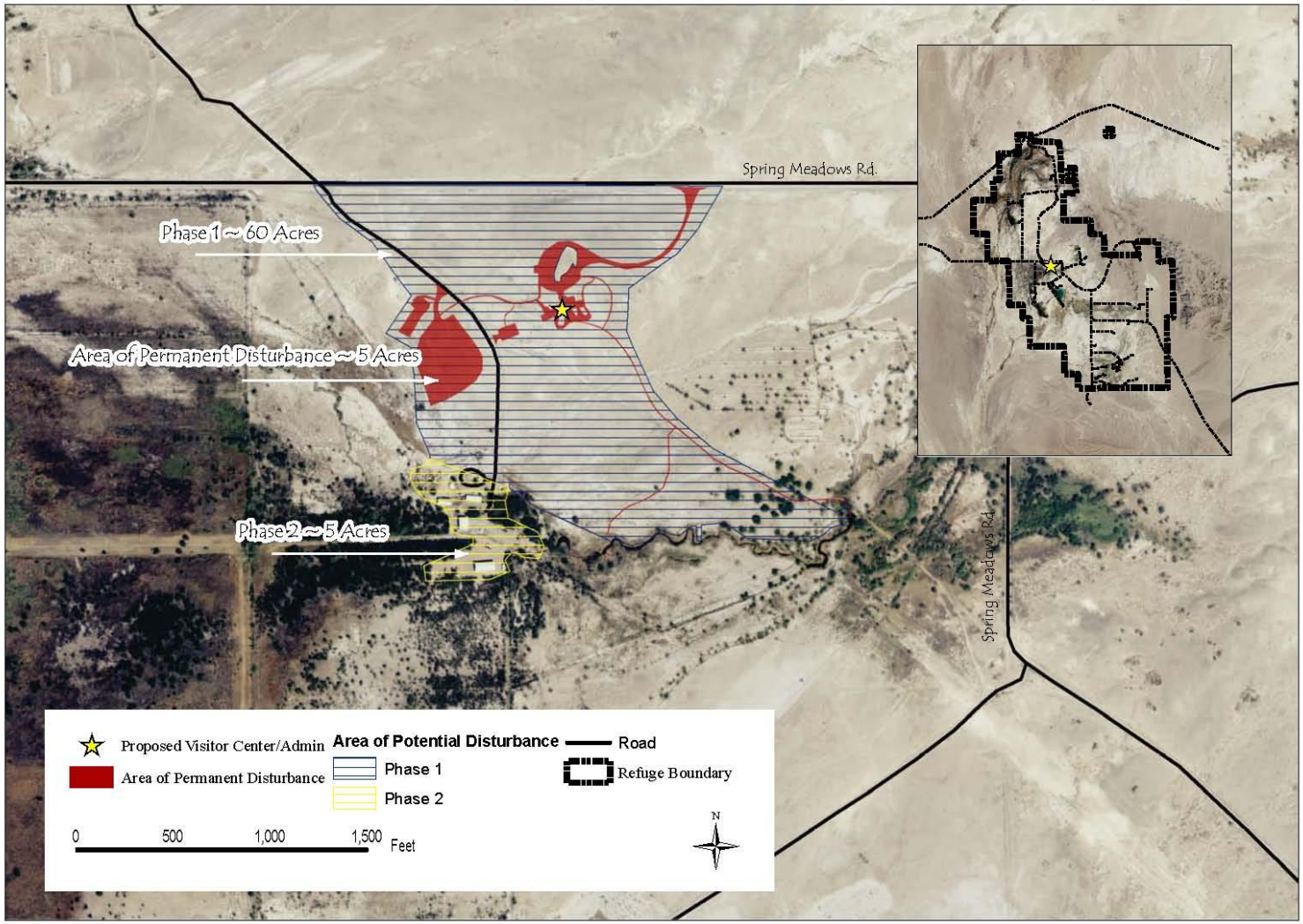


Figure 1. Location Map of Ash Meadows National Wildlife Refuge.

U.S. Fish & Wildlife Service
Ash Meadows National Wildlife Refuge
Nye County, Nevada

Figure 2. Location Map of Proposed Ash Meadows National Wildlife Refuge Visitor Center (Including Administrative Facilities), Shop/Maintenence Buildings and Crystal Spring Boardwalk.



UTM NAD 83 Zone 11

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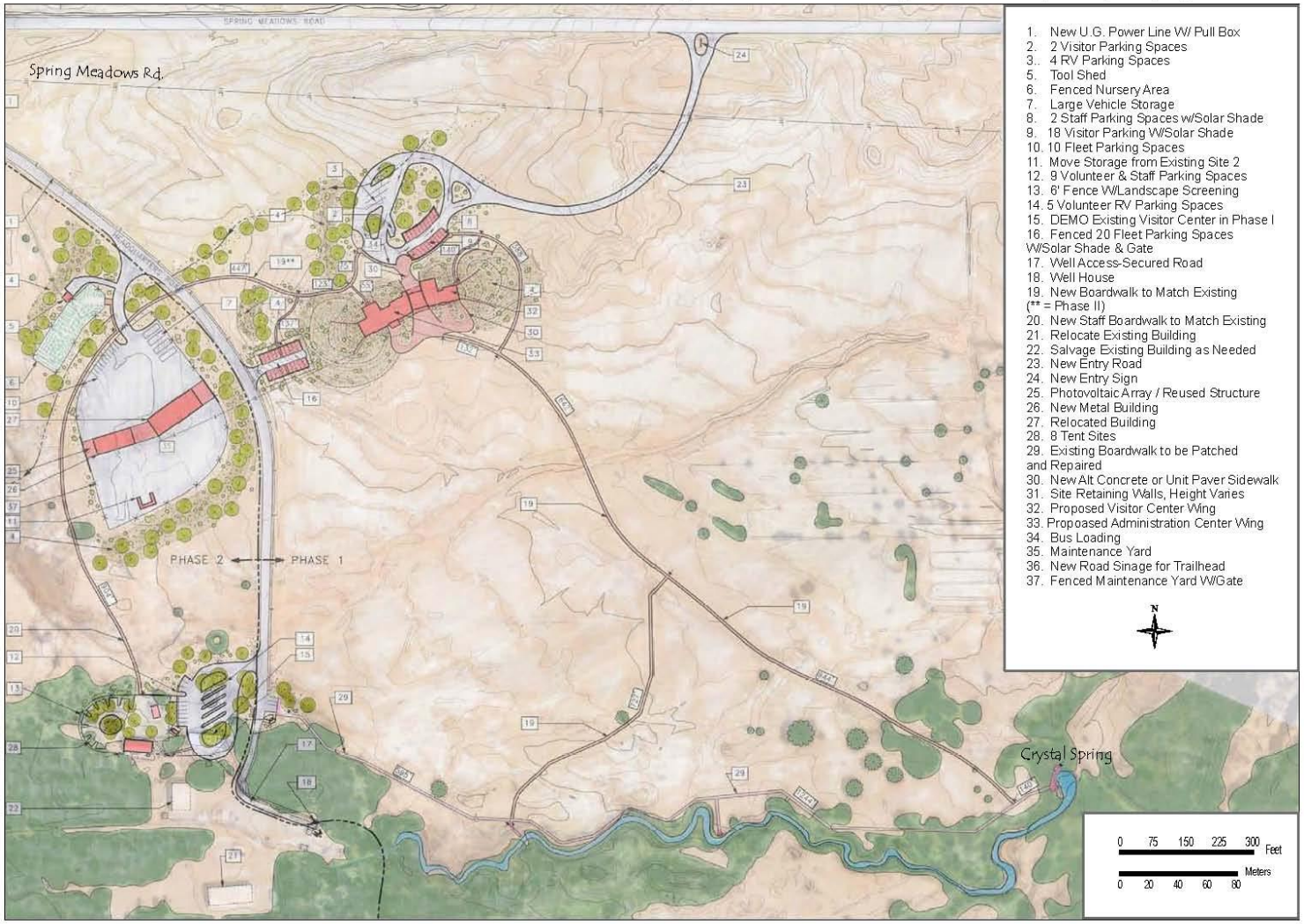
U.S. Fish & Wildlife Service
Ash Meadows National Wildlife Refuge
Nye County, Nevada

Figure 3. Conceptual Facility Site Plan of the Proposed Project Showing Existing Refuge Headquarters Infrastructureand Proposed Ash Meadows NWR Visitor Center (Including Administrative Facilities), Shop/Maintence Buildings and Crystal Spring Boardwalk.



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